

## REMARKS

Reconsideration of the above-identified application in view of the present amendment is respectfully requested.

The applicants acknowledge with appreciation, the allowance of claims 3 and 5, in the indication of the allowability of claims 12-17. Claims 3 and 5 are maintained in their allowable condition. Allowable claims 12-17 are amended to address the clarity items set forth on pages 2 and 3 of the Office action. Accordingly, it is believed that claims 12-17 are in condition for allowance. Also, claims 4 and 11 are amended to address clarity issues in addition to amendments to claims 1 and 2.

Turning to the rejection of claims 1, 2, 4, and 11 in view of Park (U. S. Patent No. 5,910,693) and Suzuki et al. (U. S. Patent No. 5,508,578, hereinafter referred to as "the Suzuki Patent"), the rejection is respectfully traversed.

Focusing for the moment on claim 1, is to be appreciated that in order to improve the heat radiation characteristic of a stator by making the heat conduction from a stator core to a mounting plate better, a rising portion is provided on a side of an inner peripheral portion of a mounting plate, and an annular portion of the stator core is fixed directly onto the rising portion. In distinction, the approach set forth by the Park patent does not include provision of a rising portion on the side on an inner peripheral portion of the mounting plate and fixing of an annular portion of the stator core directly onto the rising portion. The Office action states that Park discloses a rising portion being provided on a side of an inner peripheral portion of a mounting plate. In particular, the Office action draws attention to Fig. 4 of the Park patent. However, as is actually provided in the motor of Fig. 1-4 of the Park patent, the stator core is mounted on the mounting plate 1 through a collar, which is made from a different member from the mounting plate, without providing the rising portion on the side of the inner peripheral portion of the mounting plate. Since the different member lies between the mounting plate and the stator core within the park device,

Claim 4 recites as necessary conditions that the annular portion of the stator core is mounted directly on top of the rising portion of the mounting plate and that the annular portion of the stator core, the inner peripheral portion of the mounting plate, and the flange of the boss are tightened by screws extending there through.

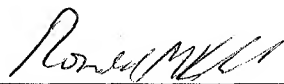
Again, it is to be appreciated that neither the Park patent nor the Suzuki patent provide for such claim features. Therefore, claim 4 is allowable.

Claim 11 recites that the annular portion of the stator core is fixed directly onto the rising portion of the inner periphery of the mounting plate. However, neither the Park patent or the Suzuki patent provide for such structural features. Therefore, even in combination of the teachings provided by the Park and Suzuki patents would not provide the present invention as set forth in claim 11. Accordingly, claim 11 is allowable.

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance and allowance for the above-identified application is respectfully requested.

If there are any fees resulting from this communication, please charge all uncovered fees to our Deposit Account No. 16-0820, our Order No. 34175.

Respectfully submitted,  
PEARNE & GORDON LLP

By   
Ronald M. Kachmarik, Reg. No. 34512

526 Superior Avenue East  
Suite 1200  
Cleveland, Ohio 44114-1484  
(216) 579-1700

Date: Feb 3, 2003

such a configuration cannot defectively perform the heat conduction from the stator core to the mounting plate.

The Suzuki patent does not provide for the deficiencies of the Park patent. Specifically, the Suzuki patent discloses that a boss is formed resin mold. However, there is no description regarding fixing the stator directly onto the mounting plate within the Suzuki patent. In the motor of the Suzuki patent, the resin mold portion is provided so as to fully cover the annular portion of the stator core, and the stator core is attached to the mounting plate through the resin mold portion. Therefore, the Suzuki patent does not show a configuration which enables a person of skill in the art to fix the stator core directly onto the mounting plate.

Assuming, arguendo, that the device of the Park patent is modified in view of the teachings provided by the Suzuki patent, it should be appreciated that the stator core is mounted on the mounting plate through the resin mold portion. It is impossible for a combination of teachings provided by the Park and Suzuki patents to provide a configuration of the present invention such that a boss is formed of resin mold and more over the stator core is fixed directly onto the mounting plate. Accordingly, it is respectfully submitted that claim 1 is allowable in view of both Park and Suzuki.

Turning attention to claim 2, it is to be appreciated that the claimed invention is directed to a presence of an annular rising portion being integrally inserted into the boss and also that the annular portion of the stator is fixed directly to the face at the top of the rising portion.

In distinction, neither the Park patent nor the Suzuki patent mentions such structural features. Therefore, even a combination of the teachings provided by the Park and Suzuki patents would not provide the present invention as set forth in claim 2. Therefore, claim 2 is allowable.

Version showing marked-up changes

Title: "OUTER ROTOR TYPE BRUSHLESS MOTOR"

Serial No.: 09/990,125

Our Docket No.: 34175

1           1. (Amended) An outer rotor type brushless motor comprising an outer rotor  
2           having permanent magnets fixed onto an inner periphery of a cup-like rotor yoke, a  
3           stator including a stator core having a plural of magnetic pole portions protruded on  
4           an outer periphery of an annular portion of said stator core and faced to said  
5           permanent magnets and coils wound on said magnetic pole portions, respectively, a  
6           cylindrical boss disposed on an inner periphery of said annular portion of said stator  
7           core, a rotational shaft extending along an axis of said boss and rotationally  
8           supported on said boss by a bearing with a leading end of said shaft having a center  
9           portion of said rotor yoke fixed thereto and a mounting plate fixed onto an outer  
10          periphery of said boss, a rising portion being provided on the side of an inner  
11          peripheral portion of said mounting plate so as to form at the top of said rising  
12          portion a face parallel to the face of said inner peripheral portion, said boss being  
13          formed of resin mold and extending through a hole in said mounting plate and fixed  
14          thereto and said annular portion of said stator core being fixed [by screw to the top  
15          of said rising portion] directly to the top of said rising portion by screw.

1           2. (Amended) An outer rotor type brushless motor comprising an outer rotor  
2           having permanent magnets fixed onto an inner periphery of a cup-like rotor yoke, a  
3           stator including a stator core having a plural of magnetic pole portions protruded on  
4           an outer periphery of an annular portion of said stator core and faced to said  
5           permanent magnets and coils wound on said magnetic pole portions, respectively, a  
6           cylindrical boss disposed on an inner periphery of said annular portion of said stator  
7           core, a rotational shaft extending along an axis of said boss and rotationally  
8           supported on said boss by a bearing with a leading end of said shaft having a center  
9           portion of said rotor yoke fixed thereto and a mounting plate fixed onto an outer  
10          periphery of said boss, said boss being formed of resin mold, an annular rising  
11          portion being formed on the side of an inner peripheral portion of said mounting  
12          plate so as to form at the top of said rising portions a face parallel to the face of said

13 inner peripheral portion, said annular rising portion being integrally inserted into said  
14 boss so as to be fixed thereto when said boss is molded and said annular portion of  
15 said stator core being mounted on and fixed [by screw to said face at the top of said  
16 rising portion] directly to said face at the top of said rising portion by screw.

1 4. (Amended) An outer rotor type brushless motor comprising an outer rotor  
2 having permanent magnets fixed onto an inner periphery of a cup-like rotor yoke, a  
3 stator including a stator core having a plural of magnetic pole portions protruded on  
4 an outer periphery of an annular portion of said stator core and faced to said  
5 permanent magnets and coils wound on said magnetic pole portions, respectively, a  
6 cylindrical boss disposed on an inner periphery of said annular portion of said stator  
7 core, a rotational shaft extending along an axis of said boss and rotationally  
8 supported on said boss by a bearing with a leading end of said shaft having a center  
9 portion of said rotor yoke fixed thereto and a mounting plate fixed onto an outer  
10 periphery of said boss, said boss being formed or resin mold, a flange being  
11 protruded on the outer periphery of said boss, an annular rising portion being  
12 provided on the side of an inner periphery of said mounting plate, an annular  
13 peripheral portion provided at the top of said rising portion and having a face parallel  
14 to said mounting plate being mounted on said flange of said boss, said annular  
15 portion of said stator core being mounted [on said] directly on an inner peripheral  
16 portion at the top of said rising portion, and said annular portion of said stator core,  
17 said inner peripheral portion of said mounting plate and said flange of said boss  
18 being tightened by screws extending through them.

1 11. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor  
3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery of an annular portion of said stator core and faced  
5 to said permanent magnets and coils wound on said magnetic pole portions,  
6 respectively, with coil insulation layers provided between said magnetic pole portions  
7 and said coils, respectively, a cylindrical boss disposed on an inner periphery of said  
8 annular portion of said stator core, a rotational shaft extending along an axis of said

9 boss and rotationally supported on said boss by a bearing with a leading end of said  
10 shaft having a center portion of said rotor yoke fixed thereto and a mounting plate  
11 fixed onto an outer periphery of said boss, said boss being formed of resin mold,  
12 said annular portion of said stator core being inserted into an outer periphery of said  
13 boss so as to be fixed thereto, said coil insulation layers of said stator core being  
14 formed of resin mold, said annular portion of said stator core being fixed directly to a  
15 rising portion provided on the inner periphery of said mounting plate and said boss  
16 and said coil insulation layers being integrally formed.

1 12. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor  
3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery of an annular portion of said stator core and faced  
5 to said permanent magnets and coils wound on said magnetic pole portions,  
6 respectively, a cylindrical boss disposed on an inner periphery of said annular  
7 portion of said stator core, a rotational shaft extending along an axis of said boss  
8 and rotationally supported on said boss by a bearing with a leading end of said shaft  
9 having a center portion of said rotor yoke fixed thereto and a mounting plate fixed  
10 onto an outer periphery of said boss, said boss being formed of resin mold, said  
11 annular portion of said stator core being inserted into an outer periphery of said boss  
12 so as to be fixed thereto when said boss is molded, said annular portion of said  
13 stator core being fixed to a rising portion provided on the inner periphery of said  
14 mounting plate, [an annular rising portion being provided on said mounting plate,] a  
15 hole being provided in said rising portion forming an inner peripheral portion at the  
16 top of said rising portion, a plural of radial slots being provided in said inner  
17 peripheral portion around said hole, said annular portion of said stator core being  
18 integrally inserted into said boss at ribs so as to be supported by said ribs of said  
19 boss at said slots of said mounting plate and said annular portion of said stator core  
20 being fixed to said inner peripheral portion of said mounting plate.

1 13. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor

3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery of an annular portion of said stator core and faced  
5 to said permanent magnets and coils wound on said magnetic pole portions,  
6 respectively, with coil insulation layers provided between said magnetic pole portions  
7 and said coils, respectively, a cylindrical boss disposed on an inner periphery of said  
8 annular portion of said stator core, a rotational shaft extending along an axis of said  
9 boss and rotationally supported on said boss by a bearing with a leading end of said  
10 shaft having a center portion of said rotor yoke fixed thereto and a mounting plate  
11 fixed onto an outer periphery of said boss, said boss being formed of resin mold,  
12 said annular portion of said stator core being inserted into an outer periphery of said  
13 boss so as to be fixed thereto, said coil insulation layers of said stator core being  
14 formed of resin mold, said annular portion of said stator core being fixed to a rising  
15 portion provided on the inner periphery of said mounting plate, [an annular rising  
16 portion being provided on said mounting plate] a hole being provided in said rising  
17 portion forming an inner peripheral portion at the top of said rising portion, a plural of  
18 radial slots being provided in said inner peripheral portion around said hole, said  
19 annular portion of said stator core being integrally inserted into said boss at ribs so  
20 as to be supported by said ribs of said boss at said slots of said mounting plate and  
21 said annular portion of said stator core being fixed to said inner peripheral portion of  
22 said mounting plate.

1 14. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor  
3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery of an annular portion of said stator core and faced  
5 to said permanent magnets and coils wound on said magnetic pole portions,  
6 respectively, with coil insulation layers provided between said magnetic pole portions  
7 and said coils, respectively, a cylindrical boss disposed on an inner periphery of said  
8 annular portion of said stator core, a rotational shaft extending along an axis of said  
9 boss and rotationally supported on said boss by a bearing with a leading end of said  
10 shaft having a center portion of said rotor yoke fixed thereto and a mounting plate  
11 fixed onto an outer periphery of said boss, said boss being formed of resin mold,

12 said annular portion of said stator core being inserted into an outer periphery of said  
13 boss so as to be fixed thereto, said coil insulation layers of said stator core being  
14 formed of resin mold, said annular portion of said stator core being fixed to a rising  
15 portion provided on the inner periphery of said mounting plate, said boss and said  
16 coil insulation layers being integrally formed, [an annular rising portion is provided on  
17 said mounting plate,] a hole being provided in said rising portion forming an inner  
18 peripheral portion at the top of said rising portion, a plural of radial slots being  
19 provided in said inner peripheral portion around said hole, said annular portion of  
20 said stator core being integrally inserted into said boss at ribs so as to be supported  
21 by said ribs of said boss at said slots of said mounting plate and said annular portion  
22 of said stator core being fixed to said inner peripheral portion of said mounting plate.

1 15. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor  
3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery [on an outer periphery] of an annular portion of said  
5 stator core and faced to said permanent magnets and coils wound on said magnetic  
6 pole portions, respectively, a cylindrical boss disposed on an inner periphery of said  
7 annular portion of said stator core, a rotational shaft extending along an axis of said  
8 boss and rotationally supported on said boss by a bearing with a leading end of said  
9 shaft having a center portion of said rotor yoke fixed thereto and a mounting plate  
10 fixed onto an outer periphery of said boss, said boss being formed of resin mold and  
11 having ribs integrally protruded from the outer periphery thereof, said annular portion  
12 of said stator core being inserted into an outer periphery of said boss so as to be  
13 fixed thereto when said boss is molded, said annular portion of said stator core  
14 being fixed to a rising portion provided on the inner periphery of said mounting plate,  
15 a hole being provided in said mounting plate, a plural of rising portions being  
16 intermittently provided on an inner peripheral portion around said hole in a  
17 circumferential direction, core supports being provided at the tops of said rising  
18 portions in parallel to said inner peripheral portion, said annular portion of said stator  
19 core being mounted on said core supports and said annular portion of said stator  
20 core being inserted into an outer periphery of said boss when said boss is molded



21 so as to be supported by said ribs above said inner peripheral portion between  
22 adjacent rising portions.

1 16. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor  
3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery of an annular portion of said stator core and faced  
5 to said permanent magnets and coils wound on said magnetic pole portions,  
6 respectively, with coil insulation layers provided between said magnetic pole portions  
7 and said coils, respectively, a cylindrical boss disposed on an inner periphery of said  
8 annular portion of said stator core, a rotational shaft extending along an axis of said  
9 boss and rotationally supported on said boss by a bearing with a leading end of said  
10 shaft having a center portion of said rotor yoke fixed thereto and a mounting plate  
11 fixed onto an outer periphery of said boss, said boss being formed of resin mold and  
12 having ribs integrally protruded from the outer periphery thereof, said annular portion  
13 of said stator core being inserted into an outer periphery of said boss so as to be  
14 fixed thereto, said coil insulation layers of said stator core being formed of resin  
15 mold, said annular portion of said stator core being fixed to a rising portion provided  
16 on the inner periphery of said mounting plate, a hole being provided in said  
17 mounting plate, a plural of rising portions being intermittently provided on an inner  
18 peripheral portion around said hole in a circumferential direction, core supports  
19 being provided at the tops of said rising portions in parallel to said inner peripheral  
20 portion, said annular portion of said stator core being mounted on said core supports  
21 and said annular portion of said stator core being inserted into an outer periphery of  
22 said boss when said boss is molded so as to be supported by said ribs above said  
23 inner peripheral portion between adjacent rising portions.

1 17. (Amended) An outer rotor type brushless motor comprising an outer  
2 rotor having permanent magnets fixed onto an inner periphery of a cup-like rotor  
3 yoke, a stator including a stator core having a plural of magnetic pole portions  
4 protruded on an outer periphery of an annular portion of said stator core and faced  
5 to said permanent magnets and coils wound on said magnetic pole portions,

6 respectively, with coil insulation layers provided between said magnetic pole portions  
7 and said coils, respectively, a cylindrical boss disposed on an inner periphery of said  
8 annular portion of said stator core, a rotational shaft extending along an axis of said  
9 boss and rotationally supported on said boss by a bearing with a leading end of said  
10 shaft having a center portion of said rotor yoke fixed thereto and a mounting plate  
11 fixed onto an outer periphery of said boss, said boss being formed of resin mold and  
12 having ribs integrally protruded from the outer periphery thereof, said annular portion  
13 of said stator core being inserted into an outer periphery of said boss so as to be  
14 fixed thereto, said coil insulation layers of said stator core being formed of resin  
15 mold, said annular portion of said stator core being fixed to a rising portion provided  
16 on the inner periphery of said mounting plate, said boss and said coil insulation  
17 layers being integrally formed, a hole being provided in said mounting plate, a plural  
18 of rising portions being intermittently provided on an inner peripheral portion around  
19 said hole in a circumferential direction, core supports being provided at the tops of  
20 said rising portions in parallel to said inner peripheral portion, said annular portion of  
21 said stator core being mounted on said core supports and said annular portion of  
22 said stator core being inserted into an outer periphery of said boss when said boss is  
23 molded so as to be supported by said ribs above said inner peripheral portion  
24 between adjacent rising portions.